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Saudi Arabian Budgetary Dilemmas

Robert E. Looney

In 1986, Saudi Arabia experienced widely fluctuating oil markets.¹ The decline in oil prices from a high of \$28 a barrel in January 1986 to a low of \$8 in mid-year called for a radical restructuring in several areas of the economy and administration.

An indication of the seriousness of the decline in the oil market became apparent in March 1986 when the 1986/87 national budget was deferred for at least five months, with public spending continuing at the average monthly level of 1985. In August, 1986, the budget was deferred again because of the difficulty of predicting national revenues at a time of great uncertainty in the oil markets.

When the budget was announced on 31 December 1986, it contained a surprisingly high expenditure level of SR 170,000 (\$43,335 million), only six per cent below that allocated in the previous fiscal year. There were also substantial allocations for capital projects – SR 50,000 (\$13,335 million) – and for operations and maintenance – SR 20,000 (\$5,335 million).

The OPEC accord reached in Geneva in December enabled the kingdom to set a higher target for oil revenues in 1987 than in fiscal 1985/86. At SR 65,200 million (\$17,390), estimated oil earnings are 6.5 per cent up, representing more than 55 per cent of total government revenues. The rest will come from investment income, estimated at about \$8 billion, and reserves.

The budget allows for a deficit of SR 52,700 million (\$14,055 million). In the previous budget no deficit was foreseen but a \$14,000 million shortfall was incurred. Avoiding borrowing or politically sensitive tax measures deficits will most likely continue to be made up from reserves estimated at around \$90 billion.²

Presumably these projections will reassure the country's private sector that the bottom has been reached in prices and production and that henceforth the government will press ahead with the Fourth Five-Year Development Plan which came into effect in 1985 without depleting reserves to levels that would be imprudent. The new oil strategy implemented in late 1986 and centered on a price of \$18 a barrel appears to be holding. Saudi Arabia's King Fahd has indicated numerous times that he would like to see prices remain stable for at least two years.

Realistically however it is likely that the government will face falling or at best stable oil revenues for the next several years. Clearly the major problem currently facing the government is how best to utilize its dwindling oil revenues to generate positive overall rates of economic growth while at the same time meeting to the fullest extent possible the basic needs of the majority of the population.

The purpose of this paper is to explore several options the government might consider in its attempt to reduce expenditures.

ACTUAL REVENUE AND EXPENDITURE
(BILLION RIYALS)

	1982	1983	1984	1985	1986
Total Revenue	386.0	246.2	206.4	171.5	131.5
Oil Revenue	328.6	186.0	145.1	121.3	87.7
Other Revenue	39.4	60.2	61.3	50.2	43.8
Total Expenditure	236.6	244.9	230.2	216.4	181.5

	Rate of Growth 1982-86	Rate of Growth 1986
Agriculture	12.2%	13.0%
Mining	-4.4%	-3.3%
Non-oil Manufacturing	4.0%	-9.8%
Construction	-12.6%	-20.0%
Wholesale and Retail Trade	-0.5%	-11.7%
Transport and Communication	1.4%	-11.8%
Ownership of Dwellings	-3.5%	-10.0%
Finance	-5.2%	-15.7%
Services	0.0%	-3.9%

GOVERNMENT EXPENDITURES AND PRIVATE SECTOR ACTIVITY

Public spending has been the principal factor in the kingdom's remarkable boom decade which ended in 1983. Growth continues to depend on the flow of funds through the government, but the volumes being disbursed at present (1987) are about 36 per cent less than the 1982 peak.³

This has been reflected in the level of output. Gross domestic product (GDP) at constant prices was more than 24 per cent lower in 1986 than in 1982 when national production was at its highest. In terms of individual sectors the contraction in output has been even more spectacular:⁴

This has prompted a debate in the kingdom as to how the economy can be encouraged to develop and expand. Some sections of the business community have been lobbying the government to increase its overall level of expenditure to help restore growth. In turn officials have been asking why the private sector, one of the most liquid and wealthy in the developing world is not doing more to help the process. In this regard, the agricultural sector has come under increased scrutiny.

AGRICULTURAL POLICIES

In particular the authorities are concerned that Saudi farmers are not investing enough of their own resources in agriculture, but instead are continuing to rely on a number of government supports. To many observers, agriculture is the most logical area to examine for potential budgetary savings.

The government has at tremendous costs attempted, partly for security reasons to achieve relative self-sufficiency in food.

At first glance the results seem impressive: in less than a decade Saudi

Arabia has turned itself into the breadbasket of the Gulf. Between the mid-1970s and 1985 wheat output grew more than tenfold, to over 2 million tonnes. During that period the increase in Saudi production accounted for four-fifths of the rise in wheat output for the entire Middle East and North Africa. Wheat production is now far above domestic needs and there is a severe shortage of storage capacity. Block, US Secretary of Agriculture, called the Saudi wheat program 'crazy' but the official Saudi position is that it has been 'a thrilling story of real success'.⁵

As noted above, to achieve all this, the Saudi Arabian government has spent vast sums of its oil wealth on price supports, grants, input subsidies and interest free credit. To meet its targets for the Fourth Plan the government originally anticipated spending nearly 11 billion riyals. Loans granted by the Saudi Agricultural Bank⁶ increased particularly rapidly⁷ after the oil price increases of 1973-74 and 1979-80. In fact, subsidized loans from the Bank increased from 2.9 per cent in 1974 to nearly 50 per cent in 1983 of the total value of agricultural output. Subsidized loans also increased their ratio to total commercial bank private credit from 0.8 per cent to 7.3 per cent during this period.

The result has been the creation of a farming sector that appears to be technologically sophisticated, but is economically very inefficient. As noted above, now that oil revenues have declined and the real costs have become clearer, the government has begun to question some of these policies. The following sections examine the potential benefits that reductions in agricultural expenditures would have in offsetting the decline in government revenues.

POTENTIAL BENEFITS FROM REDUCED AGRICULTURAL EXPENDITURES

Before the discovery of oil, Saudi Arabia was primarily an agricultural country. Where possible, sedentary farming was practiced, but much of the farming was nomadic.⁸ Poor soils and very little water were the facts of life for the people of Saudi Arabia for millennia. Production was nearly subsistence in nature.⁹

By the end of the 1960s, it had become evident that the scope for agricultural modernization would be severely limited if it relied on altering the existing relations of production. In the sedentary sphere, there was little scope for any kind of modernization without a fundamental alteration in property ownership patterns. Nonetheless, land was available for expansion, but it fell under the rubric of *hema* land¹⁰ and its status was still ambiguous. It was also apparent to most observers that any attempt at sedentarization of pastoralists, or of integrating them into national markets, was unlikely to be successful while either:

1. pastoral patterns continued to be viable (either through objective economic factors or as a result of subsidies)
2. or as the alternative of military service and/or urban work was available and highly lucrative.

In short, Saudi Arabia was confronted with the dilemma typical of many oil economies over the issue of agriculture – whether it was better to attempt to resolve the growing alienation and sense of marginalization of rural populations or whether the growing problem of food insufficiency should take precedence.¹¹

By 1980 the Government had decided to make agriculture a major priority. This was done by creating a totally new situation in which the problems inherent in the existing social and economic agricultural patterns could be circumnavigated – although existing agriculturalists would find opportunities to participate if they wished.¹² In fact, Saudi officials went so far as to exhort farmers to produce a substantial part of the country's basic food needs or, in the words of the Third Development Plan¹³ to establish and maintain a prudent level of self-sufficiency in food production.

Particularly since 1980, financial encouragement by the state of food production by the private sector has become the most important single factor influencing agricultural change. However, three other issues are especially significant in influencing policy towards agriculture. They can be summarily described as relating to water resources, manpower and regional stability – a familiar trio in the setting of the Arabian peninsula.¹⁴

The importance given agriculture by the Saudi Arabian government may seem somewhat surprising when set against a background of an extremely hostile environment and the chronic manpower shortage which affects not only the economy in general, but agriculture in particular. And yet, the evidence now clearly indicates that the 1980s have been a decade of quickly accelerating agricultural transformation. This phenomenon is in sharp contrast to the 1960s, characterized by progressive stagnation and the 1970s, a decade of slowly growing momentum.

Simply put, the relevant question with regard to the country's agricultural strategy is whether or not the government programs to increase self-sufficiency in food can be justified and or sustained in the post-1982 era of declining government revenues.

Agricultural Credit

In the eight years up to April 1983, 27,000 farmers received over SR 11.8 billion in loans from the Saudi Arabian Agricultural Bank (SAAB), and agricultural production subsidies administered by the Ministry of Agriculture and Water (MAW) between 1975 and 1985 totalled SR 6.7 billion; in 1982/83 SAAB loans reached SR 4.2 billion, but as noted above began to decline in recent years, falling back in 1983/84 to SR 3.5 billion and SR 2.3 billion in 1984/85. Project lending now account for just under 50 per cent of SAAB lending activity.

Between 1978 and 1982 the MAW licensed 977 agricultural projects with costs totalling ST 9.58 billion, including 129 wheat and fodder projects costing SR 1.9 billion, 152 greenhouse projects costing SR 1.8 billion, 189 egg production ventures at SR 1.5 billion and 267 for poultry costing SR 1 billion. The recent average level of investment for private investment projects approved by MAW which has been in excess of SR 1 m., indicated that

an agricultural dichotomy has occurred and a modern, commercial, highly capitalized sector, completely divorced from traditional small-scale farming, has not been created. At the same time 13.2 billion was disbursed between 1975 and 1983 on food and feed subsidies.¹⁵

Crop Subsidies

As noted above many observers have argued that in addition to subsidized farm credit, the recent expansion of agriculture in the Kingdom has been largely attributable to extensive financial support in the form of:¹⁶

1. subsidies of 50 per cent of the cost of fertilizers and 100 per cent of the cost of pesticides.
2. subsidies of 20–30 per cent of the cost of equipment for poultry and dairy farms, and 40–50 per cent on selected farming equipment.
3. subsidies on purchase of date palms and seed potato.
4. subsidies of 100 per cent on the air freight cost of importing cattle, provided at least fifty head are imported at one time.

The results of the government's credit and subsidy programme are, as noted above starting to pay off in terms of fairly spectacular results; Saudi Arabia is now self-sufficient in wheat, eggs, and dates. In fact, it has a small exportable surplus in all these commodities, which tends in the case of wheat and dates to be donated rather than sold abroad. Wheat production figures vary between those giving estimated overall production and those recording deliveries to the Grain Silos and Flour Mills Organization. In 1982/83 the volume of wheat sold to the government was 674,631 tonnes against an overall production figures of 817,478 tonnes.

However, a number of problems have been associated with subsidy programs. Over-production for example has been a major problem, and one whose costs in an era of austerity are becoming hard to justify. For example in 1983/84 and 1984/85 wheat deliveries were 1,346,930 tonnes and 1,700,000 tonnes respectively. Local demand however was around 1.0m. tonnes. The government's efforts to try and dissuade farmers from planting wheat have been hampered by the emergence of a strong farmers' (especially wheat growers) lobby. This is particularly evident from the fact that in late 1986, the government decided to subsidize barley-growing in the kingdom, but at rates roughly one half that paid wheat farmers:

It was obviously felt to be politically impossible to reduce the guaranteed purchase price for wheat further, at the same time as bordering on the ridiculous at a time of government financial restraint to sanction a price for barley any more in excess of world prices. This is despite the fact that the Saudi government has been paying more than the world market for some time in order to cater to the kingdom's rapidly expanding demand for barley . . . for although the SR1 per kg price for barley is roughly four times the world price, the difference in production costs in Saudi Arabia is not that great, and it seems clear that wheat producers are still being guaranteed a wider profit margin. One recent estimate put the cost of barley production in the kingdom at SR1/kg,

against SR.25/kg. for wheat, suggesting that the new subsidy offers hardly any guaranteed profit margin for barley growers. Even if this estimate of barley production cost is too high, it is clear that wheat producers are still being courted by the government.¹⁷

However cuts in guaranteed government purchase prices of wheat and new moves to introduce quotas on the volumes the government must take from large farms are anticipated. The government is hoping that the switch away from wheat will not affect agricultural output overall, but lead to increased production of barley and vegetables.

International circles have criticized Saudi Arabia for paying this unreasonable price. Some have even gone so far as to demand that the government lift its wheat supports, as American Secretary of Agriculture John Block did, offering better American wheat at lower prices. The Saudi reply was total rejection.

Saudi officials have a very different view of their wheat policy, one that is reasonable for the most part and which can be summarized as follows:¹⁸

1. Wheat is a strategic commodity exactly like oil, but more important. In the past the Saudis have been threatened by the United States about possible embargoes on the Arabs a wheat embargo, if the Arabs imposed an oil embargo.
2. The price of wheat has varied in previous years between \$200 and \$117 per tonne, creating uncertainty about the volume of foreign exchange required to import the Kingdom's requirements.
3. Saudi programs achieve self-sufficiency in wheat, and expand the cultivated area in the countryside, job opportunities and good utilization of resources in addition to saving at least \$300 million a year that it would have paid in foreign currency for wheat. In addition the Saudi government offers the wheat to consumers at subsidized prices, and when it is cultivated it offers subsidies for wheat in riyals, and not dollars.
4. If Saudi Arabia did not encourage agriculture in general, and wheat in particular, it would have to create tens of thousands of job opportunities for those now working in agriculture. Most of these opportunities would be in government administration, which would increase the burden on the government's already rising deficit. In addition, a failure to develop the countryside would cause the rural population to emigrate to the cities, enlarging them and forcing billions of riyals to be spent on expanding urban facilities.

GOVERNMENT PROGRAMS IN THE FOURTH DEVELOPMENT PLAN

Most of the programmes outlined above have been extended and or enlarged during the Fourth Development Plan period (1985-90). The Plan anticipates agriculture as one of the key elements in the government's strategy to diversify the economy.¹⁹ •

It has long been recognized that the importance of agriculture to the Kingdom extends beyond that of its contribution to national output

alone. At the end of the Third Plan period, almost half of the Kingdom's population was living in rural areas and a significant proportion of total Saudi employment was in agriculture. Apart from the strategic significance of increasing domestic food production for a growing population, the planned development of agriculture fulfils other important roles. It generates employment both within the sector and in closely related agro-industries. It contributes to the diversification of the economic base and to import substitution, while raising income levels and improving rural living standards for both settled and nomadic communities alike. This has a positive influence on the population balance and helps to prevent population drift to the urban centers. A further important aspect of agricultural development in the Kingdom is its role in maintaining the ecological balance through combatting desertification.

Three major objectives provide the overall policy framework for agricultural development during the Fourth Plan²⁰: (a) to achieve a satisfactory rate of increase in farm output at minimum cost, by encouraging innovations which exploit the possibilities for technical change most appropriate to the Kingdom's natural resource endowments; (b) to achieve a broadly based improvement in the welfare of the rural population; and (c) to raise the productive and marketing efficiency of agricultural producers and to attract private capital investment into agriculture, through the provision of loans on easy terms.

To achieve these major objectives for agricultural development, the government plans to adopt the following policies:²¹

1. land classification surveys will be continued and arable land distributed only in those areas with high-potential renewable water resources; areas with critical ground water depletion rates will be identified and regulations introduced relating to appropriate water pumping rates and acreage for specific crops;
 2. support programmes of agricultural inputs and services will be continued, including those relating to the distribution of seeds, seedlings and insecticides; extension services to farmers will be expanded;
 3. existing irrigation and drainage systems will be improved to optimize water usage;
 4. mechanization of farms will be encouraged; research support will be provided for studies on problems specific to the Kingdom's agriculture and which are oriented towards the application of appropriate modern technology;
 5. marketing channels will be improved by the provision of storage facilities for farmers;
 6. information will be collected and disseminated on agricultural production, prices and costs of various agricultural commodities; market studies will be conducted on the main cash crops and will include demand and supply projections;
 7. joint studies will be conducted with GCC member-countries to
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promote inter-regional co-operation in the production storage, and marketing of the main food items, including fisheries;

8. the storage capacity of the grain silos will be increased to include a six-month strategic stockpile of wheat; training of the development of agricultural manpower will be intensified at all levels, particularly in relation to operation and maintenance of agricultural machinery;
9. short-, medium-, and long-term loans will be provided, in accordance with the needs of both small and large farmers; and
10. supervision of lending programmes will be improved to ensure that cash loans are utilized for specific purposes.

There is no doubt that with the shortfall in oil revenues, below that anticipated when the plan was drawn up, a number of the government's subsidies to agriculture will be scaled back. Wheat subsidies have already been cut and a number of Saudi officials are indicating that other subsidies are to follow:

It is now accepted (and illustrated by the reduction in the generous wheat subsidy) that as one Saudi official put it, "the experiment is over". He was alluding to the massive subsidy support given by the Government to private enterprise, which had produced spectacular statistical results. "Now" he went on, "the Government is saying the private sector must take up more fully its share of the burden and depend on itself".²²

Results in Reducing Food Imports

While self-sufficiency in agricultural products is not a realistic goal for the Kingdom, government officials have long expressed a desire at increasing the proportion of food supplies produced domestically.²³ While the Saudis have made great strides in this direction, increased overall demand for food associated with the acceleration in incomes after 1973-74 appears to have outstripped the ability of the country to increase production. Based on the standard import classification scheme used by the Saudi Arabian Monetary Agency,²⁴ it appears that each of the four main food import categories: (a) live animals and animal products, (b) vegetable products, (c) animal and vegetable fats, and (d) prepared foods beverages, have all increased their proportion of total agricultural value added since 1968.²⁵

1. imports of live animal and animal products increased their share of total agricultural output from 30.0 per cent in 1968 to 52.6 per cent a decade later, reaching a high of 88.7 per cent in 1980;
 2. imports of vegetable products show a similar pattern, increasing from 40.0 per cent of domestic agricultural output in 1968 to 69.8 per cent a decade later. Imports reached a peak in 1982 of 122.7 per cent of domestic production.
 3. animal and vegetable fats have been the smallest import category, increasing from 4.6 per cent of agricultural output in 1968 reaching a maximum of 11.9 in 1980, an falling to 5.9 in 1984;
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4. prepared foods and beverages, increased from 15.8 per cent of agricultural output in 1968 to nearly 70 per cent a decade later. These products increased their proportion of total agricultural output to nearly 90 per cent in 1980, only to fall to 49.4 per cent in 1984.
5. by 1984, in all cases there had been a significant drop in the proportion of each import from its maximum value.

On the other hand, while Saudi Arabia appeared to be increasing its import dependence on food during this period, agricultural products as a percentage of total imports showed a significant decrease:

1. live animal and animal products decreased their share of total imports from 10.2 per cent in 1968 to 3.0 a decade later. This figure has however increased to 4.0 by 1984;
2. vegetable products decreased as a proportion of total imports from 13.7 per cent in 1968 to 3.9 per cent a decade later. They have also increased their share in recent years to 7.5 per cent in 1984;
3. animal and vegetable fats fell from 1.6 per cent of total imports in 1968 to 0.4 per cent a decade later, remaining fairly constant since;
4. prepared foods and beverages have maintained a fairly stable share of total imports, falling from 5.4 per cent in 1968 to 3.1 per cent in 1982, only to increase slightly in 1984;
5. The common pattern therefore experienced by the four major food import categories, was that of a decline in total imports until the late 1970s, followed by a slight increase by 1984. The net result in all cases was however a reduction in total imports over the period as a whole.

The reduction of agricultural products in total imports is reflected of course in import elasticities with respect to total imports of less than unity.²⁶ Over the period 1968–74 all of the major food related import items had import elasticities significantly under one.²⁷ For example, the import elasticity of live animal and animal products was 0.80, while the elasticity of vegetable products, animal and vegetable fats and prepared foods, and beverages were 0.34, 0.54 and 0.71 respectively. The analysis of import elasticities indicate the greatest increases in imports took place in wood products (1.61), glassware (1.37), jewellery (1.23), and miscellaneous manufacturing (.27).

While an examination of import elasticities is interesting in itself, a deeper understanding of the forces underlying the mix between Saudi Arabia imported and domestically-produced food products can be obtained from an examination of the import elasticity of food with regard to various macroeconomic aggregates. Have food imports been linked to, or do they show slower pace than demand? How have agricultural imports preformed relative to other import categories? A number of macro-economic variables were selected for analysis including: non-oil income, gross domestic product, government expenditures, private sector expenditures, private

consumption, total investment, government investment and private investment. The elasticity estimates indicated:

1. The elasticity of agricultural imports tends to be fairly high, usually over unity for most categories and with respect to most demand items other than investment.
2. In general imports of food items tend to be most highly associated with non-oil income, although fairly similar results were found with private sector expenditures.
3. With respect to non-oil income, agricultural imports tended to have slightly lower import elasticities than total imports (1.82). However, the food categories did in general have higher elasticities than several other major categories (textiles, and transportation equipment).
4. Contrary to the pattern found in most cross section studies,²⁸ the elasticity of demand for food imports tends to be greater than unity.

These patterns are confirmed when examining the import elasticity with regard to various measures of monetary demand. Here the logarithm of various import categories was regressed on the logarithm of commercial bank credit and alternative measures of aggregate purchasing power as depicted by various measures of the money supply.²⁹ In general the results indicate that:

1. In contrast to the results found by Wilson,³⁰ there does not appear to be a strong link between commercial bank credit to the private sector and any major category of imports.
2. Except for animal and vegetable fats, (a small import category in any case) the import elasticity for food tends to be well above unity.
3. Imports of food tend to be highly associated with expansion of the money supply, with perhaps the best linkage with the M2 definition of money.
4. In general the food categories tend to have the lowest elasticity of import of any of the major categories of imports.

To sum up, food imports appear quite responsive to increases in overall demand, with Saudi Arabia having an unusually high propensity to increase food imports with expanded incomes and/or purchasing power. For policy purposes however, it would be interesting to determine whether the expansion in agricultural imports was simply excess demand that could not be met by a growing agricultural sector, or whether these imports were largely the result of a buoyant demand and an unresponsive agricultural sector. To shed some light on this issue the logarithmic values of the various import categories were regressed on the log values of the major sector contributions to gross domestic product. Here, the results strongly indicate that:

1. for all practical purposes there is no relationship between agricultural imports and domestic agricultural production.
2. agricultural imports are closely related to manufacturing and wholesale and retail trade, both having elasticities averaging over unity.

3. in terms of statistical significance the link between agricultural imports and manufacturing – wholesale trade is among the highest of the major import categories.

From these results it is apparent that agricultural imports are largely demand-driven, and largely compensate for lack of responsiveness on the part of the domestic agricultural sector to increased levels of overall demand. Clearly, a significant volume of imports would have been eliminated if the domestic agricultural sector had been more responsive to growing demand in the kingdom for food.

CONCLUSION

The purpose of this paper was to explore the potential benefits of reducing government allocations to agriculture, an area of the Saudi budget which has in the past accounted for a significant share of public sector expenditures. The analysis indicates that it is apparent that the government no longer has the resources to attempt self-sufficiency in food production, nor have past efforts in this regard been sufficiently encouraging to warrant continued attempts. While no formal cost benefit analysis of agricultural programmes has been undertaken here, it is apparent that the Kingdom should be able to offset some of the short-fall in oil revenues by diverting a substantial amount of funds from its relatively inefficient agricultural programmes.

NOTES

N.B. Billion = American usage: one thousand millions (1,000,000,000).

1. The following summary of recent budgetary developments is based on 'Introduction,' in Middle East Economic Digest, *Saudi Arabia: MEED Special Report* (June 1987), pp.2-5; Michael Ritchie, 'Saudi Arabia,' in *The Middle East Review*, 1987 (London: World of Information, 1987), pp.167-83; and Economist Intelligence Unit, *Country Report: Saudi Arabia* Nos.1 and 2, 1987).
2. This figure is not official, as the Saudi leadership has never released figures concerning the size and composition of its portfolio. The figure is, however, widely viewed as reflecting the approximate size of the government's foreign assets. For example Sharif Ghaleb, Middle East Analyst for the Institute of International Finance in Washington, estimated in September 1985 that the Kingdom's total foreign assets were worth \$92 billion. However, after adjusting for irretrievable loans to Iraq, and developments in the currency and bond markets, the real value of the Saudi asset portfolio is probably no more than \$75 billion. Cf. Ritchie, op., cit., p.169.
3. Data are from Saudi Arabian Monetary Agency *Annual Report 1406 (1986)* Research and Statistics Department, 1987, p.30.
4. Data are from Saudi Arabian Monetary Agency, *Annual Report 1406 (1986)* Research and Statistics Department, 1987.
5. Vahid Vahidirvani, 'The Yellow Brick Road: Self-Sufficiency or Self-Enrichment in Saudi Agriculture?' *Middle East Report* (March-April 1987), p.7.
6. A brief description of this and other specialized development banks is given in Adnan M. Abdeen and Dale N. Shook, *The Saudi Financial System* (New York: John Wiley, 1984).
7. Data are from the Saudi Arabian Monetary Agency, *Annual Report* various issues.
8. Ali D. Johany, Michel Berne and J. Wilson Mixon, *Saudi Arabian Economy* (Baltimore: The Johns Hopkins University Press, 1986). p.109.

9. Richard Nyrop (ed.), *Saudi Arabia A Country Study* (Washington: The American University, 1984). p.185.
10. It is an old Arab custom that communities maintain huge areas of land surrounding central nomadic territories to be their own tribal grazing reserves, for their sole benefit and utilization. Such land was considered as communal and tribal property and maintained as such by force. During the lifetime of the Prophet, *hema* land was used as pasture for the horses and camels used in wars. Later, it was made available also for the animals of individually poor Muslims as well as for the common interest of the community. Hassan Hamza Hajrah, *Public Land Distribution in Saudi Arabia* (London: Longman, 1982), p.11.
11. E.G.H. Joffe, 'Agricultural Development in Saudi Arabia: The Problematic Path to Self-sufficiency,' in Peter Beaumont and Keith McLachlan (eds.), *Agricultural Development in the Middle East* (New York: John Wiley & Sons, 1985), pp.220-21.
12. *Ibid.*, p.221.
13. Kingdom of Saudi Arabia, Ministry of Planning, *Third Development Plan, 1980-85* (Riyadh, Ministry of Planning, 1980).
14. Howard Bowen-Jones and Roderick Dutton *Agriculture in the Arabian Peninsula* (London: The Economist Intelligence Unit, 1983), p.16.
15. Economist Intelligence Unit, *op cit.*, p.13.
16. MERI Repot, *us op.cit.*, p.81.
17. The Economist Intelligence Unit, *Country Report: Saudi Arabia* (No.4, 1986), p.14.
18. 'Wheat Policy, Price Defended,' *Al-Mustaqbal* (Paris), 16 Nov. 1985. p.46. Translated in Foreign Broadcast Information Service: *Near East/South Asia Report* 15 Jan. 1986, pp.114-116.
19. Kingdom of Saudi Arabia, Ministry of Planning, *Fourth Development Plan, 1985-1990*. (Riyadh: Ministry of Planning, 1985).
20. Fourth Development Plan, *op.cit.* p.192.
21. Fourth Plan *op.cit.*, pp.192-93.
22. Anthony McDermott, 'Subsidies are Being Reduced,' *Financial Times* (22 April, 1985), p.XII.
23. Keith McLachlan, 'The Agricultural Potential of the Arab Gulf States,' in M.S. El Azhary, *The Impact of Oil Revenues on Arab Gulf Development* (London: Croom Helm, 1984), p.125. See also: A.A. EL Sherbini, *Food Security Issues in the Arab Near East* (Oxford: Pergamon Press, 1979).
24. Saudi Arabian Monetary Agency, *Annual Report*, various issues, (Table 21).
25. Since comparable figures on domestic production are not available, each of the import items is divided by the total value added of domestic agricultural production (in current riyals).
26. Here elasticity is defined as the percentage change in imports divided by the per cent change in total imports. For estimation purposes the elasticity coefficients are estimated by first preforming logarithmic transformations on the various import categories and total imports. The coefficient of the regression of the import category on total imports with the data so transformed is the elasticity coefficient.
27. These results and those that follow are summarized from a larger study of Saudi Arabian budgetary options - Robert E. Looney, 'Depressed Oil Revenues and Austerity: Saudi Arabian Budgetary Dilemmas,' Working Paper, Department of National Security Affairs (1987), copies of which are available from the author upon request.
28. Cf. Hollis B. Chenery, 'Patterns of Industrial Growth,' *American Economic Review* (Sept. 1960).
29. Data are taken from the Saudi Arabian Monetary Agency, *Annual Report*, various issues. See this source for a definition of the various items included in the alternative definitions of the Saudi money supply.
30. Rodney Wilson, 'The Impact of Falling Oil Revenue on Saudi Arabia's Import Policy,' *The Arab Gulf Journal* (Oct. 1985), pp.7-16.